Renal studies: dynamic renography, static cortical scintigraphy, direct and indirect cystograms

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This presentation is based on the paediatric guidelines on how to perform renal studies in children, published by EANM (1-4), and our own experience gained from performing approximately 900 renal studies in children per year. The age of our patients ranges from 0 to 18 years of age. Forty per cent of our renal studies are done on children less than four years of age. For many departments, doing mainly adult patients, getting the paediatric patient to cooperate may be a challenge.

A number of things can be done to improve the situation. Appropriate information to the family pre-study, including the child, relief of unnecessary pain and means to divert the focus of the child during the investigation make the study situation more comfortable to all parties (5). Conscious sedation is considered only when nothing else is sufficient (in our practice in <4 per cent of the cases). By inserting a peripheral vein catheter (PVC) the injection of the radiopharmaceutical is made very safe with practically no subcutaneous depositions over the years. Furthermore unnecessary punctures for blood samples can be avoided and it can also be used for other examinations the same day or the day after. In our department the PVC is placed and the radiopharmaceutical injected by the technologists. All children over three months of age get topical anaesthetic cream applied one hour before placing the PVC.

Communication and co-ordination with other departments of the hospital are important for good and efficient over-all care taking of the child.

Immobilisation is another crucial issue. Placing the small child in a vacuum cushion is a well-accepted way to achieve immobilisation. Scheduling the study to a natural sleeping period for the child, for example after lunch, is also helpful.

Children under 3 years of age can nevertheless find it difficult to lie still. By using dynamic acquisition with frame rates of 15-30 sec, rather than static, motion correction can be done and some images be removed from the study before reframing into a static image. We use this technique routinely to obtain a good image quality.

References